

What is claimed is:

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1. A method of producing a shape, comprising:
using a virtual reality environment in which positions
of a user's hand are tracked; and

forming a three-dimensional modeled surface by adding
shapes defined by hand movements at each of a plurality of
intervals.

2. A method as in claim 1 wherein an inside surface
of the hand is used to form the modeled surface, by
tracking movement of a tangent to the hand, to define a
tangent plane of a surface being created.

3. A method as in claim 2 wherein said using
comprises tracking hand movement is tracked via a tracker
and glove.

4. A method as in claim 1 further comprising using
an incrementally technique to take an existing mesh of
samples and changing it to add a new sample.

5. A method as in claim 4 wherein said technique
comprises finding a neighborhood of samples, identifying a

surface region, removing identified parts, and creating new parts to replace the identified parts, where the new parts take a new sample into account.

6. A method as in claim 5 wherein said A method as in claim 5 wherein said technique utilizes a projective plane to determine how the new parts should be formed.

7. A method as in claim 1 wherein the surface is selected as a normal to the surface of the hand.

8. A method as in claim 1 further comprising defining a first hand position which defines a starting position and a second hand position which defines a stopping of drawing.

9. A method as in claim 1 further comprising defining a hand position which forms an eraser tool.

10. A method as in claim 1 further comprising modifying the drawing using one of a plurality of props.

11. A method as in claim 10 wherein said props are tongs which can be squeezed and moved to rotate the shape.

12. A method as in claim 10 wherein said prop is a spherical ball.

13. A method as in claim 10 wherein said prop is a sponge which alters a look of the shape.

14. A method as in claim 13 wherein said altering is by smoothing.

15. A method of producing a shape, comprising:
tracking a position of a user's hand; and
forming a three-dimensional modeled surface based on said position of said user's hand at different times.

16. A method as in claim ¹⁵16, wherein said forming comprises using the hand to create 3d-strokes of shape.

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17. A method as in claim 16, wherein said using comprises using the bend of the hand to define the curvature of 3d-strokes.

18. A method as in claim 16, further comprising displaying a trace of the path of the hand,

sensing at least 7 of the hand's degrees of freedom for the purposes of shape creation, said degrees of freedom including the hand's position and orientation in space, along with degrees of freedom that are affected by the hand's posture.

19. A method as in claim 16, further comprising merging samples from one hand position to an existing shape.

20. A method as in claim 16 wherein said samples are added by deprojecting a shape, removing parts, adding new parts, and reprojecting said shape.

21. A method as in claim 16 further comprising using hand postures to switch between different modes of operation.

22. A method as in claim 16 wherein a first hand posture comprises a start to track posture.

23. A method as in claim 16 wherein a second hand posture comprises a stop track posture.

24. A method as in claim 16, further comprising displaying different tools at the hand's position based on different postures.

25. A method as in claim 16 further comprising using the finger to draw a narrower stroke.

26. A three dimensional drawing device, comprising:
a hand tracking element, which tracks three dimensional positions and hand shapes of an operator's hand in a virtual reality environment in which positions of a user's hand are tracked; and

forming a three-dimensional modeled surface by adding shapes defined by hand movements at each of a plurality of intervals.

27. A shape drawing system, comprising:

a user interface which operates to command shapes to be created; and

a processing element which incrementally adds surface regions to an extant surface.

28. A system as in claim 27, wherein said user interface tracks hand movements.

29. A method of drawing on a computer, comprising:
displaying a first shape on the computer;
using the hand to define a new shape, to be added to
said first shape;
using said new shape to apply deformations to
said first shape; and
displaying said first shape as deformed by said new
shape.

30. A method as in claim 29, wherein a portion of the
first moves toward the hand.

31. A system of 3d shape-creation, comprising:
monitoring hand posture;
obtaining continuous variables that continuously vary
between a maximum value and a minimum value based on said
hand posture; and
using said variables to define a shape.